

T1-T2

FIGURE 1

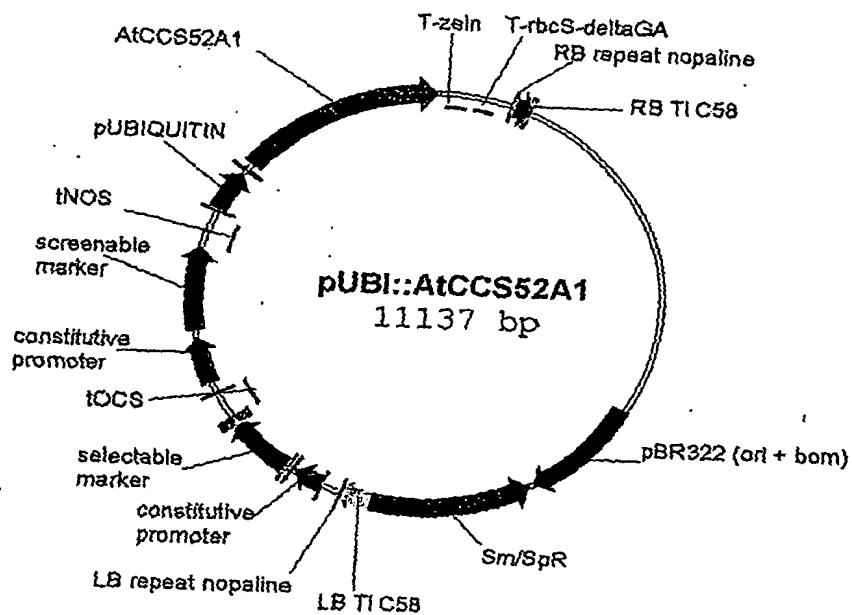


FIGURE 2

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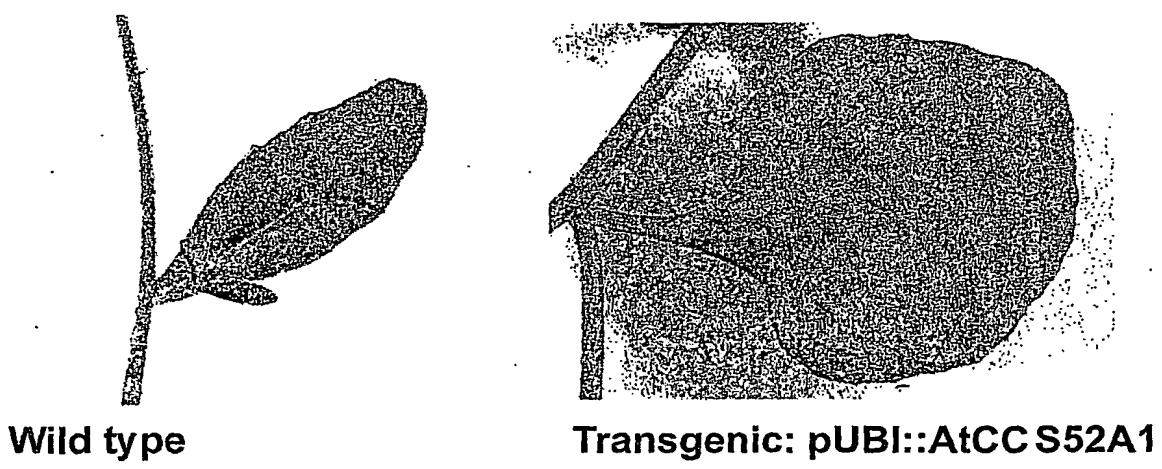
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Wild type

Transgenic: pUBI::AtCCS52A1

FIGURE 3

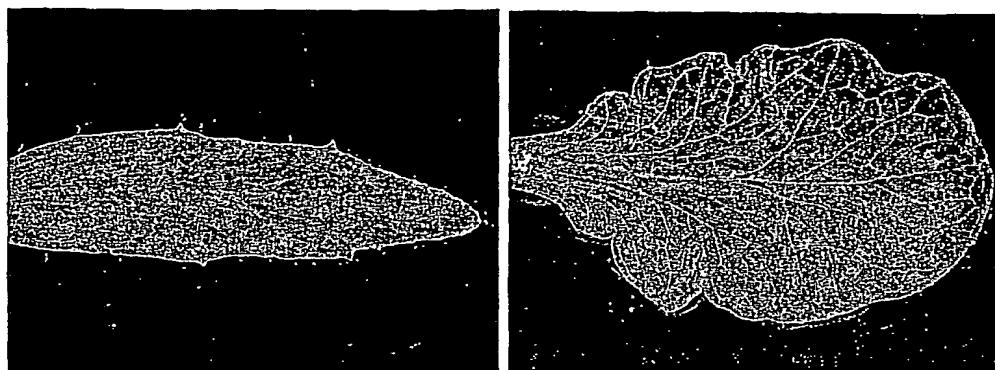


Wild type

Transgenic: pUBI::AtCCS52A1

FIGURE 4

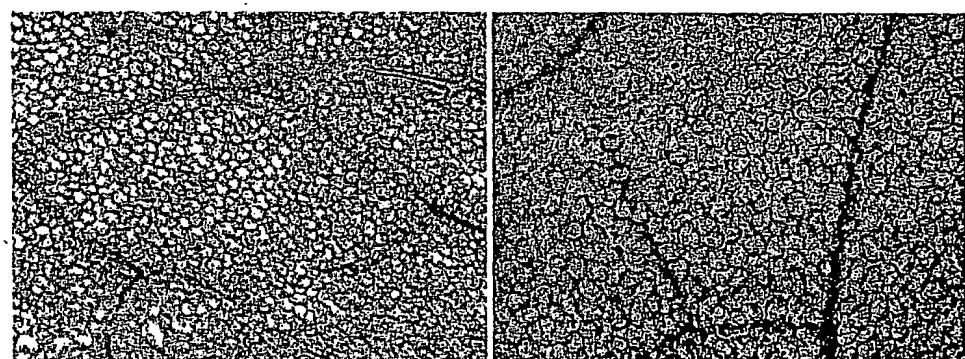
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Wild type

Transgenic: pUBI::AtCCS52A1

FIGURE 5



Wild type

Transgenic: pUBI::AtCCS52A1

FIGURE 6

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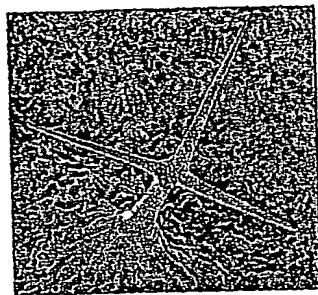
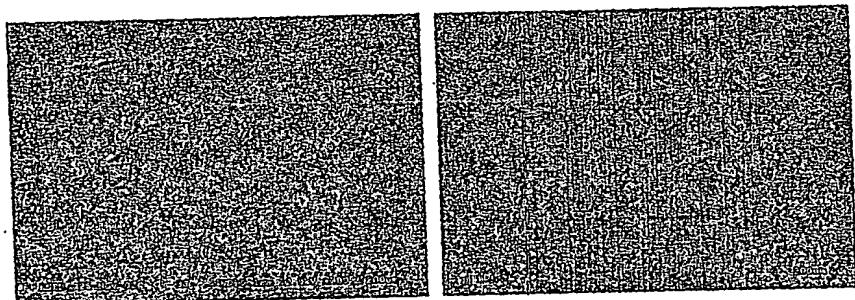
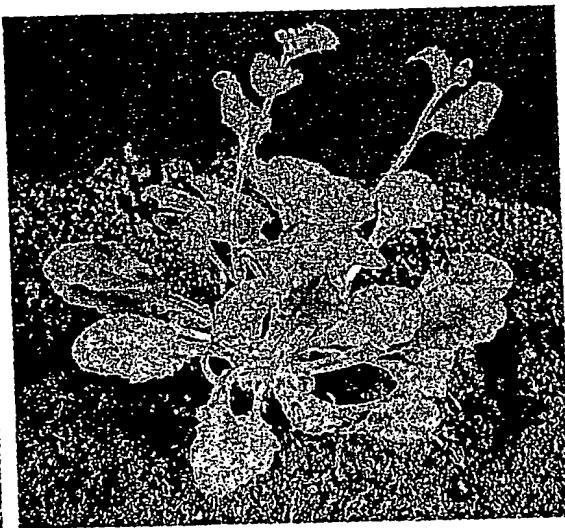
**A Wild type****B Transgenic: pUBI::AtCCS52A1**

FIGURE 7



Wild type



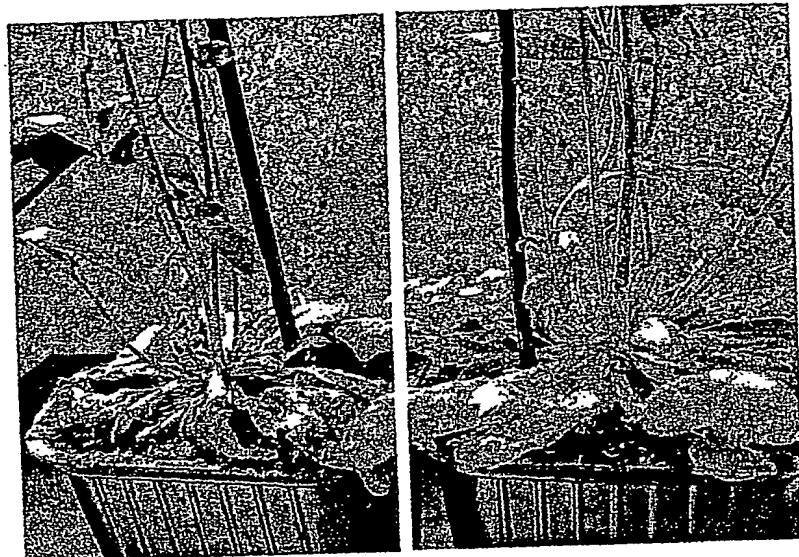
Transgenic: p2S2::AtCCS52A1

FIGURE 8

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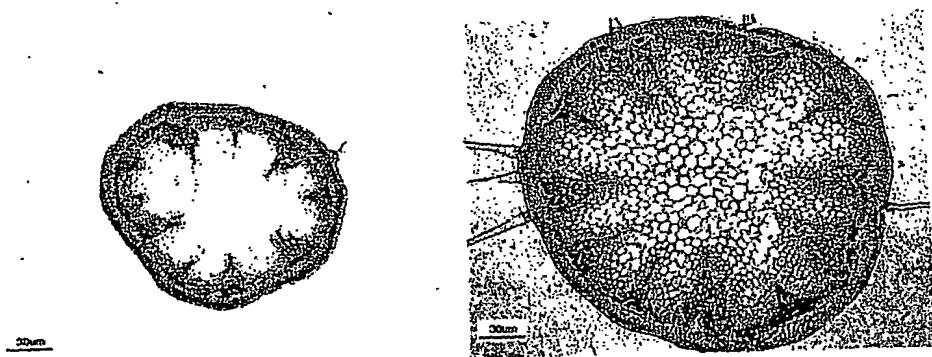
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Wild type

Transgenic: pUBI::AtCCS52A1

FIGURE 9

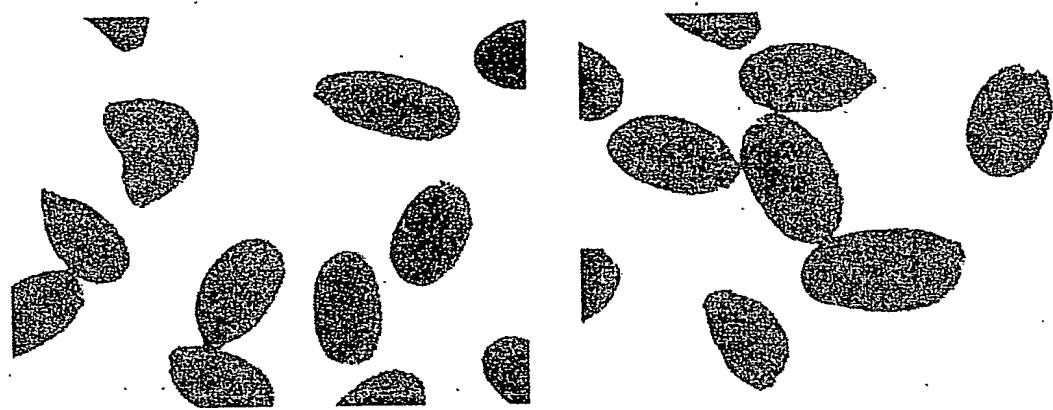


Wild type

Transgenic: pUBI::AtCCS52A1

FIGURE 10

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Wild type

Transgenic: pUBI::AtCCS52A1

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FIGURE 11

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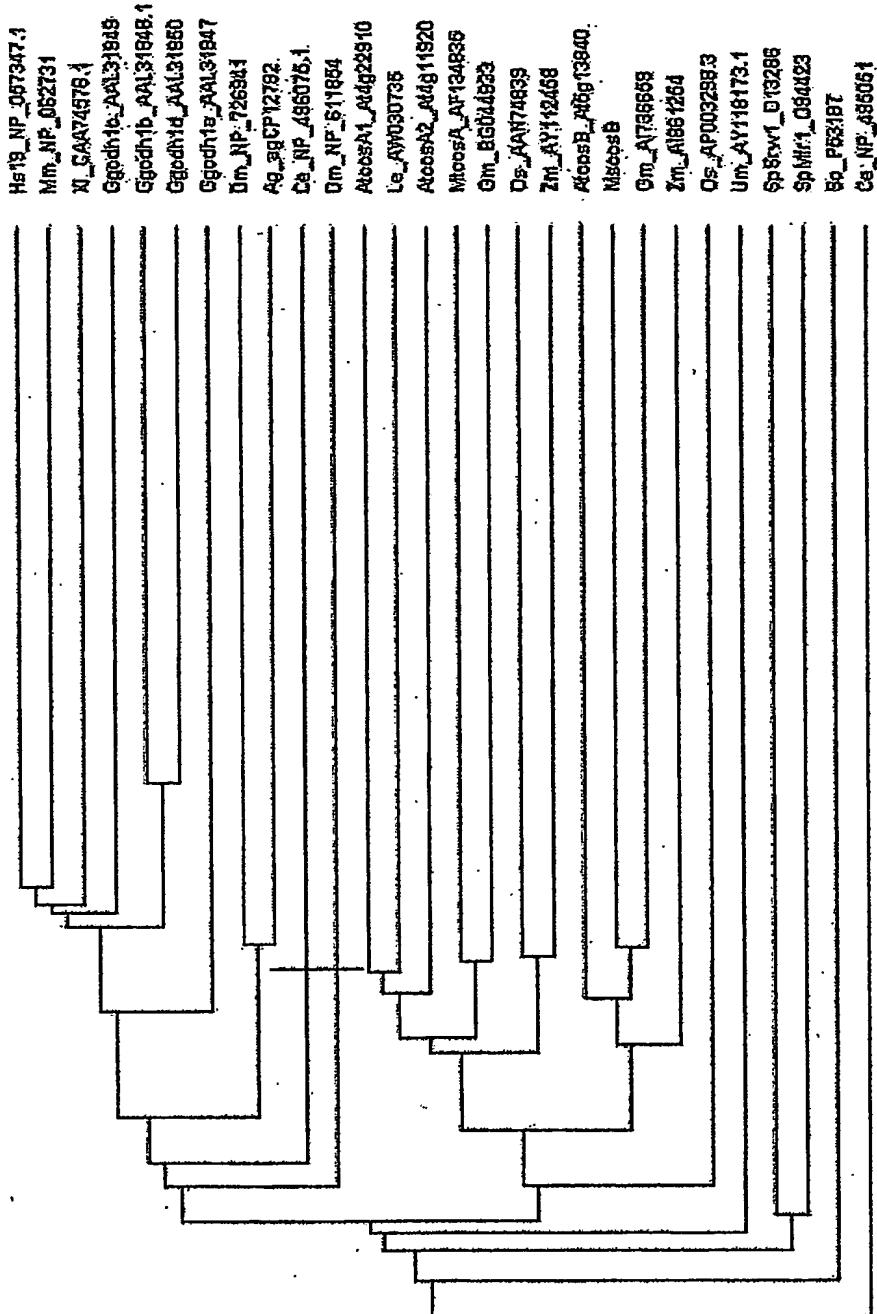


FIGURE 12

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## CCS52 motifs

Gene	C-box	Motif 1
AtCCS52A1 (At4g22910)	62 DRFIPSR 68	70 GSNFALFDL 78
AtCCS52A2 (At4g11920)	53 DRFIPSR 59	61 GSNFALFDL 69
AtCCS52B (At5g13840)	46 DRFIPCR 52	54 SSRLHAFDL 62
Rice CCS52A (AK070642)	52 DRFIPSR 58	60 GSNLALFDL 68
Consensus	DRFIPXR	X\$XXXXFDL
SEQ ID NO	SEQ ID NO 16	SEQ ID NO 7

Motif 2	Motif 3	Motif 4
88 EDGAGSYATLLRAAMFG 104	117 SSSRNIFRFKTEETHRSL 133	207 SKVTKL 211
81 EDGAGSYASLLKTAALFG 97	111 SPSGNIFRFKTEIQRSL 127	198 SKVTKL 202
73 EGGNEAYSRLLKSELFQ 89	111 SPCTNMLRFKTDRSNS 129	203 SKVTKL 207
93 TPASSPYCALLRAALFG 109	137 PATGNIFRFKAEVPRNA 152	228 SKVTKL 232
XXXXXXXXXXLXXXXFG	XXXXXXXREKX (2 or 4) RXX	SKVTKL
SEQ ID NO 8	SEQ ID NO 9	SEQ ID NO 10

Motif 5	Motif 6
289 DHVSKLAGHKS 300	329 HSTQPVLKYSEH 340
283 DHVSKLKGHKS 293	330 HSTQPVLRFCEH 341
288 DFVSKLGVGHKS 298	335 HSQQPILKLTEH 346
313 DYISRLAGHKS 323	352 HSAHPVLKYTEH 363
DXXSXLXGHKS	HSXXPXLXXXEH
SEQ ID NO 11	SEQ ID NO 12

Motif 7	Motif 8	Motif 9
371 WNTTTTNTHLSSIDT 384	403 LYLAISPDGQTVT 416	471 EIGSSFFGRTTIR 483
364 WNTTTTNTHLNCVDT 377	426 LYLAISPDGQTVT 439	463 EIGALSFGRRTTIR 476
369 WNTTNGNQLNSIDT 382	431 LYLATSPDGQTVT 444	469 DTGLWSLGLTQIR 481
394 WNTTTTNMHLNCVDT 107	456 LYLAISPDGQTVT 469	495 SIGATSFVRSYIR 508
WNTTXXXXLXXXDT	LYLAXSPDGQTVT	XXGXXXXXXXXXIR
SEQ ID NO 13	SEQ ID NO 14	SEQ ID NO 15

FIGURE 13

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SEQ ID NO 1: *Arabidopsis thaliana* CCS52A1 cDNA, At4g22910

ATGGAAGAAGAAGATCCTACAGCAAGCAATGTGATAACGAATTCTCATCTATGAG  
 AAACCTATGCCGGCGATGAATACTCCGGTGGTTCACTTGAGTCACGAATCAATCGATTAA  
 TCAATGCTAATCAATCTCAATCACCATCACCATCATCAACTATCAAGGTCTATATACTCTGAT  
 AGATTATCCCCAGTAGATCCGGATCCAATTCTGCTCTTTCGATCTATCTCCTTCTCCTAG  
 TAAAGATGGAAGGAAGATGGAGCTGGCTCTACGCTACTCTGTTGCGTCGGCGATGTTG  
 GTCCTGAGACGCCGGAGAAGAGAGATATTACTGGGTTTCTTCCAGGAATATTTTAGG  
 TTTAAGACGGAGACTCATCGGTCTTGAATTCTGTTTCTCCTTGGTGTGATGATGATT  
 TCCTGGTGTCTCATAGTGGCTCTTAAAGCTCCAGGAAAGTGCCTGATGCCGATGCCGATA  
 AGATTCTGATCTCGTTGACTTAAAGCTCTGAGGTTCTGATAATGCATGAAACAATTGTGAT  
 CTTTGTGATGTTGGTCTCTGAGGGTCTAGAATTGAGTCTGAGGTATTGGATGCACCGGC  
 CTTGCAAGATGATTTATCTGAATCTGTGATTGGTCTGCACAAATGTTCTAGCAGTGG  
 GACTAGGAACTGTGTATTTATGGAATGCTTGTAGCAGCAAGGTTACTAAGTTATGTGAT  
 CTCGGAGCTGAGGATAGTGTGCTCAGTGGGTTGGCGTTACGTGGAACTCATCTGGCTGT  
 TGGAACTAGTACCGGGAAAGTTCAAGATATGGGATGCGTCACGCTGCAAGAGAACAAAGAA  
 TGGAAAGGTATCGTCTAACAGAGTTGAGCCCTGGCATGGGTTATCGGTTCTGTCATCTGG  
 AGCAGAGACAAGAGTATTCTCAGAGAGACATAAGGTGTCAGAAGATCATGTCAGTAAATT  
 GGCAGGTATAAATCTGAGGTATGCCGACTCAAGTGGCTTATGACAACAGAGAGCTAGCAT  
 CTGGTGGAAACGACAATAGGCTTTGTATGGAACCAACATTCAACACAACCGGTTTGAAA  
 TATAGTGAACACACTGCAGCTGTTAACGCCATTGCTGGTCTCCTCATGTTATGGGTTCT  
 TGCTTCTGGTGGTACTGCTGATAGTGCATACGTTTGGAAATACAACCACGAATACTC  
 ATTTAAGTTCCATAGATACTGCACTGCAAGTCTAGCTGGCTAAGAACGTAAC  
 GAGCTTGTAGCACACACGGATACTCTCAGAACCAACATTGCTGGAAATACCCAACCAT  
 GTCCAAAATTGCTACTCTAACGGTCACACATACCGAGTCTTACCTTGCGGTTTACCCG  
 ATGGACAGACGATTGTAACAGGAGCAGGAGATGAAACCTTAAGGTTCTGGAATGTTTCCCT  
 TCCCCAAATCTCAGAACACGGATAGTGAATCGGGTCGTCTTCTTGGTAGAACACAAT  
 TCGGTGAGAAGTTACTTCAAAACACAGAAAAAGTCATAAATTCTGATTCTCAGCAG  
 CAGCAGCTGAGTGGTCTCAACCAACTTTTACACGGAGCAGAGAGTCATTAAA  
 TTCTTTACACACGGATGCAACAGATCTAACCCCTTGATTTAATCACGATCTTGGTTT  
 CCATCAAGATGCACAACATTCCCCAAATTTCAGAACGAGTGTATCTTATTCAATT  
 TCTTCATATATCAAAATATAGTTCTTTGTATTTACTTACGAACACAACATT  
 AAATAAGCCCATGATAATAATGCAATAATTGTTACCATCTCTT

SEQ ID NO 2: *Arabidopsis thaliana* CCS52A1 protein

MEEEDPTASNVITNSNSSSMRNLSPAMNTPVSLESRINRLINANQSQSPSPSSLSRSIY SD  
 RFIPSRSGSNFALFDLSPSPSKDGKEDGAGSYATLLRAAMFGPETPEKRDITGFSSSRNI FR  
 FKTEHRSLSNFSPFGVDDDSPGVSHSGPVKAPRKVPRSPYKILDVLDFRSLVSIMHETI CD  
 LCDVLVSEGLEFESEVLDAPALQDDFYLNLDWSAQNVLA VGLGNCVYLWNACSSKVTKL CD  
 LGAEDSVCSVGWLRGTHLAVGTSTGKVQIWDASRCKRTRTMEGHRLRVGALAWGSSVLS SG  
 SRDKSILQRDIRCQEDHVSFLAGHKSEVCGLKWSYDNRELASGGNDNRLFVWNQHSTQPVLK  
 YSEHTAAVKIAWSPHVHGLLASGGGTADRCIRFWNTTNTHLSSIDTCQVCNLAWSKNVN  
 ELVSTHGYSQNQIIVWKYPTMSKIATLTGHTYRVLYLAVSPDGQTIVTGAGDETLRFWNVFP  
 SPKSQNTDSEIGSSFFGRTTIR

FIGURE 14

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SEQ ID NO 3: *Oryza sativa* CCS52A cDNA, AK070642

ATCCCCAAATCTCTGCCCGACCCATGGATCACCAACCACCCACCTGCCGCCGCCGCC  
 CGCGGTGCGCGATGGAGAACTCCGCGCTCTCCAAGCCGCCACCCGGCTCCACCCCGTC  
 TCGCGCCTCGCCGCCGCGCTCCCTCCCGCTCTCCGCGGCCGACCCCTCCCCGTC  
 CTCCTCCGCGCCACGCCGGCTCGCGGACGGTCTACAGCGACCGCTTATCCCCAGCCGCG  
 CGGATCCAACCTCGCGCTTCGACCTCGCCCCGTCGCCGTCCCACCACGACGCCGCC  
 GCCGCCGCTCCCCGGCGCCGCCCTCCGGATCTACCCGGCTCGCCCTACTG  
 CGCGCTCCTCCGCGCCGCTCTCCGGCCACCGCCGACGGGTGGCGTCGTCGGCGT  
 CGCGTGTCTCCCTCCCTCCGCGGGGCGTCGCCGTGGCTCACCCGCCACCGGCAAC  
 ATATTCAAGGTTCAAGGCCGAGGTGCCCGGAATGCTAACGCGCCCTTCTCCGACGGGA  
 CGACGAGGGCGTGTCTTCCCCGGGTGTTCAAGCAGAGGGCACTGGCCCAGGAAGATCC  
 CTAGGTCAACCTATAAGGTGCTGGATGCTCCGCATTGCAAGGATGACTTCTACCTGAACCTT  
 GTGGATTGGTCTTCGCATAATATCCTTGCAAGTGGATTGGGAATTGTGTCTACTTATGGAA  
 TGCATGCAGCAGCAAGGTACCAAGCTATGIGATTGGGGGTGGATGACAATGTCGTTCA  
 TGGGTTGGGACAGCGTGGCACTCACCTGCTGTAGGGACAAACCAAGGAAAGTTCA  
 TGGGATGCCACTCGTTGTAAGAGAATAAGAACCATGGAAAGCCATCGGATGCGAGTAGGTGC  
 TCTTGCAATGGATTGATTCATTGCTTGTCAAGGCACTGTCAGGCAAGAGCATCCTTCA  
 ATATCCGTGCCAGGATGATTATATTAGTAGACTTGCTGGGCATAAATCGGAGGTCTGTGG  
 CTCAAGTGGTCTTATGATAACCGTCAGCTTGCACTGGTGGTAATGACAACAGACTTATGT  
 ATGGAATCAACACTCGGCGCACCCGTAATGAGATATGAGCATACAGCAGCTGCAAAG  
 CTATTGCGTGGTCACCTCATCTTCAATGGCTGCTTGCACTGGTGGAGGAACACTGCAGATAGA  
 TGCATACGATTGGAAATACCAACAGAATATGCACTTAAATTGCGTCGACACAGGCAGTC  
 GGTCTGTAATCTGTATGGTCAAAGAATGTTAATGAGCTGTTAGGACTCATGGATACTC  
 AAAATCAGATAATTGTTGGCAACCCAAACATGTCAAAGCTGCCACATTGACAGGCCAT  
 ACATATAGGGTATTATATTAGCATCTCCCAAGATGGACAGACACTATAGTAACGGCCTGG  
 TGATGAAACGCTCGGTTTGGAACGTGTTCCATCTCCAAGTCCCAGAGTTCTGACAGCC  
 TAAGTAGCATCGGGCCACATCATTGTTAGGAGCTACATCGGTTGACACTGAGATGTTGA  
 ATCTAATAACACTGGCTCATAGTCATAACACTACTGCAAGCAGAGTGTGATGATCATCAA  
 TATCATTCCATTGTACCACTTGCACTCAGGTTGCAACCATCAAACCTAGCAAATT  
 AGAGATAGTAGGATGCAAAATGGTAAACTGGCTCGCAGACCTGGAGTGGCTATTGCTG  
 ATGCTGTATATATTATTGCTTGTAGGAGGCAAGATGGCAAACACTGACCATCCG  
 CAATGTACATTGATAAGTTCACGGCCTCTGTTTGTGAGTCAACTGGAGCT  
 GGAGCTCTTATGTATACCAGTCTAGGGCTTAACAAACATGGCCAACTCATGATGCTATTG  
 ATCCAAGTGGAAATATGCTAACAGGAGCTGGAGAATTCTGGTGC

SEQ ID NO 4: *Oryza sativa* CCS52A protein

MENSASSKPPTPASTPSSRLAAAPSSRVSSAAPHSPSSSAPTPASRTVYSDRFIPSRA  
 SN  
 LALFDLAPSPSHDAAAAAASPGAPPNGSTPASSPYCALLRAALFGPTTPDRVASSASA  
 CS  
 SSSAGASPVGSPATGNIFRFKAEPVRNAKRALFSDGDEGVLFPGVFTTRGTGPRKIPR  
 SP  
 YKVLDAPALQDDFYLNLDWSSHNILAVGLGNCVYLWNACSSKVTKLCDLGVD  
 NVCSVGWA  
 QRGTHLAVGTNQGKVQVWDATRCKRIRTMESHRMRVGALAWNSSLSSGSRDKSILH  
 HDI RA  
 QDDYI SRLAGHKSEVCGLKWSYDNRQLASGGNDNRLYVWNQHSAHPV  
 LKYTEHTAAVKAI AW  
 SPHLHGLLASGGTADRCIRFWNTTNMHLNCVDTGSQVCNLWWSKVN  
 NELVSTHGSQNI  
 IVWRYPTMSKLATLTGHTYRVLYLAISPDGQTIVTGAGDET  
 LRFWNVFSPSKSQSSDLS SI  
 GATSFVRSYIR

FIGURE 14 (continued)

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SEQ ID NO 5: *Oryza sativa* genomic DNA encoding CCS52B protein,  
AP003298

ATGCTAATGGGCCGGCCGCATGGCAGAGAGAGTACAACGGCTACTCGGGTGGGGGGCCAC  
AGTCAGAGGGAGACAGCTCGTCTAGAAAAAGTAGGCGACTTGCCCCTCAACCAAAGTGA  
CCGTTGCAACCTCATCTCCGCTCCTCTTCCCTCTCGTCGTTGTCGTCGTCGGCGGC  
GCATCCAGCCTCGACGTGCCGGCGCCGGCGCCGCGCCTCAACGTGCCGCCGGCGAT  
GGCGGGGGGGCTCCGCCTCGATCCCCGCCGTCGCCCTCCCCGCCCTCCTCGACGTCC  
CCAAGACGCCATCCCCCTTCAAGACCACGTACAGCGACCGCTTCATCCCCCTGCCGCTCCTCC  
TCCCGCCTCCACAACCTCGCCCTCCCGACCGCGACCGCGCTCCCCCTCCACCCAGA  
CGACGCCCCCTACTCCCGCCTCCCGCGCCGAGATCTTCGGCCGGACTCCCCCTCCCCGG  
CTCCCTCCTCCCCCAACACCAACCTCTTCCGCTCAAGACCACGCCCTGCCAAATCG  
CCCTTCGCCGCTCCGCCGCCACCGCCGCACTACGACTGCACCGCCGGCTCCGCTGA  
ATCCCTCACGCCGCGCAAGCCGCCAGGAAGGTCCCCAAGACCCGCACAAGGTCTGGACG  
CGCCGTCGCTGCAGGACGACTCTCACCTCAATCTTGTGACTGGTCGTCAGAACACGCTC  
GCCGTGGCCTCGGAATTGCGTCTACCTCTGGTCGGCTTCAATTGCAAGGTACCAAGCT  
CTGCGATTGGGGCCAGGGACAGCGCTGCGCTGTGCACTGGACCCGAGAAGGCTCTATC  
TTGCCATCGGCACCAGCCTGGCGATGTCCAGATTGGGATAGCTCTCGCTGTAAACGGATT  
AGGAACATGGGAGGACACCAAACACGGACTGGTGTATTAGCATGGAGCTCCGAATCTTGTG  
CTCCGGTAGCAGGGACAAGAACATATTGCAAGCATCCGTGTCCTCAAGTGAATATCA  
GCAAGTTCTCAGGGCACAGATCAGAGAACATGTATGTGCATCAAGTGAAGCTTTTTGGT  
CAGGTCTGTGGACTGAAATGGTCGACGACGACCGTGAGCTTGCATCCGGTGGAAATGATAA  
TCAGCTGCTAGTATGAAACCAACGTTCGCAGCAGCCGATATTGAGGCTGACAGAACACAG  
CTGCAAGTAAAGCAATAGCATGGTCACCATCAGCAAGGCCTCTGGCATCAGGTGG  
ACCGCTGATAGGTGTATCAGGTTCTGGAACACGGTTAATGGAAACATGCTGAATTCA  
CACAGGCAGCCAGGCAGTGTGAGCACTCATGGTATTCCAAAACAAATCATGGTGG  
AAAGTACCCATCTATGTCAAAGGTTGCTACTCTAACCTGGACACACGGCTGCGAGTGC  
TGAATGTCACCACAATAGTAACAGGAGCCGGGATGAAACCCCTCAGATTGGAAATT  
TCCTCAATGAAGACACAGTAGGCATATTGTTGA

SEQ ID NO 6: *Oryza sativa* CCS52B protein, BAB98864

MLMGRPAWQREYNGYSGGGPTVRGRQLVLEKVGDLPTPTKVTVATSSPLLFLVVVVVGG  
ASSLDVPAAPAPPRLNVPAMAGGLRLDPAVASPARLLDVPKTPSPSKTTYSDRFI  
PCRSS SRLHNFALLDRDRASPSSTTDDAPYSRLLRAEIFGPDSPSPAPSPN  
TNLFRFKTDHPSPKS PFAASAAATAGHYDCTAGSAESSTPRKPPRKVPKTPHVKLDAPS  
LQDDFYLNLDWSSQNTL AVGLGNCVYLWSASNCKVTKLCDLGPRDSVC  
AVHWTREGSYLAIGTSLGDVQIWDSSRCKRI RNMGGHQTRGVLA  
WSSRILSSGSRDKNILQHDIRVPSDYISKFSGHRSENHVC  
ASSDSFFG QVCGLKWSHDDRELASGNDNQLL  
VWNQRSQQPILRLTEHTAAVKAIAWS  
PHQOGLLASGGG TADRCIRFWNTVNGNMLNSVDTGSQATCEHS  
WVFPKPNHGVEVPIYVKGCYSNWTHAASALP  
CNVTTIVTGAGDETLRFWNIFPSMKTQVGIYC

SEQ ID NO 7: consensus motif 1 of CCS52 protein

XSXXXXFDL

FIGURE 14 (continued)

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SEQ ID NO 8: consensus motif 2 of CCS52 protein

XXXXXXYXXLLXXXXFG

SEQ ID NO 9: consensus motif 3 of CCS52 protein

XXXXNXXRFKX<sub>(2 or 4)</sub>RXX

SEQ ID NO 10: consensus motif 4 of CCS52 protein

SKVTKL

SEQ ID NO 11: consensus motif 5 of CCS52 protein

DXXSXGXGHKS

SEQ ID NO 12: consensus motif 6 of CCS52 protein

HSXXXPXLXXXEH

SEQ ID NO 13: consensus motif 7 of CCS52 protein

WNNTTXXXXLXXXDT

SEQ ID NO 14: consensus motif 8 of CCS52 protein

LYLAXSPDGQTIVT

SEQ ID NO 15: consensus motif 9 of CCS52 protein

XXGXXXXXXXIR

SEQ ID NO 16: consensus C box

DRFIPXR

SEQ ID NO 17: consensus motif 1 of CCS52A proteins

GSN (F/L) ALFD (L/I)

SEQ ID NO 18: prm03191

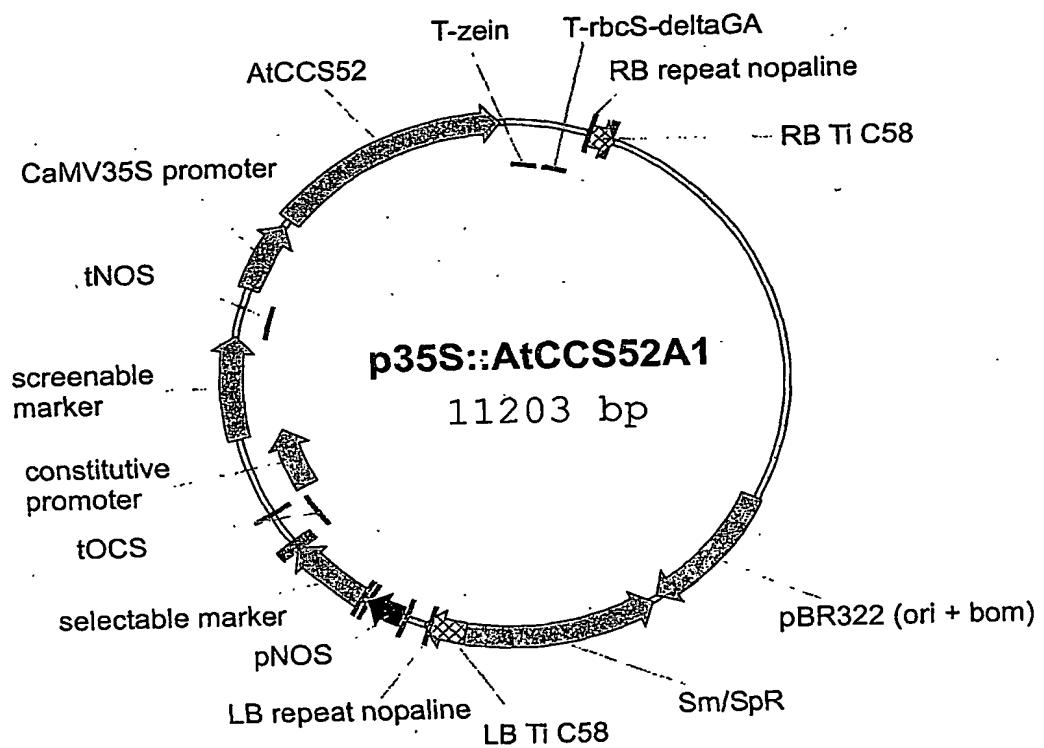
GGGGACAAGTTGTACAAAAAAGCAGGCTTCACAATGGAAGAAGATCCTACAGC

SEQ ID NO 19: prm01392

GGGGACCACTTGTACAAGAAAGCTGGGTTCTACCGAATTGTTGTTCTAC

FIGURE 14 (continued)

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**FIGURE 15**

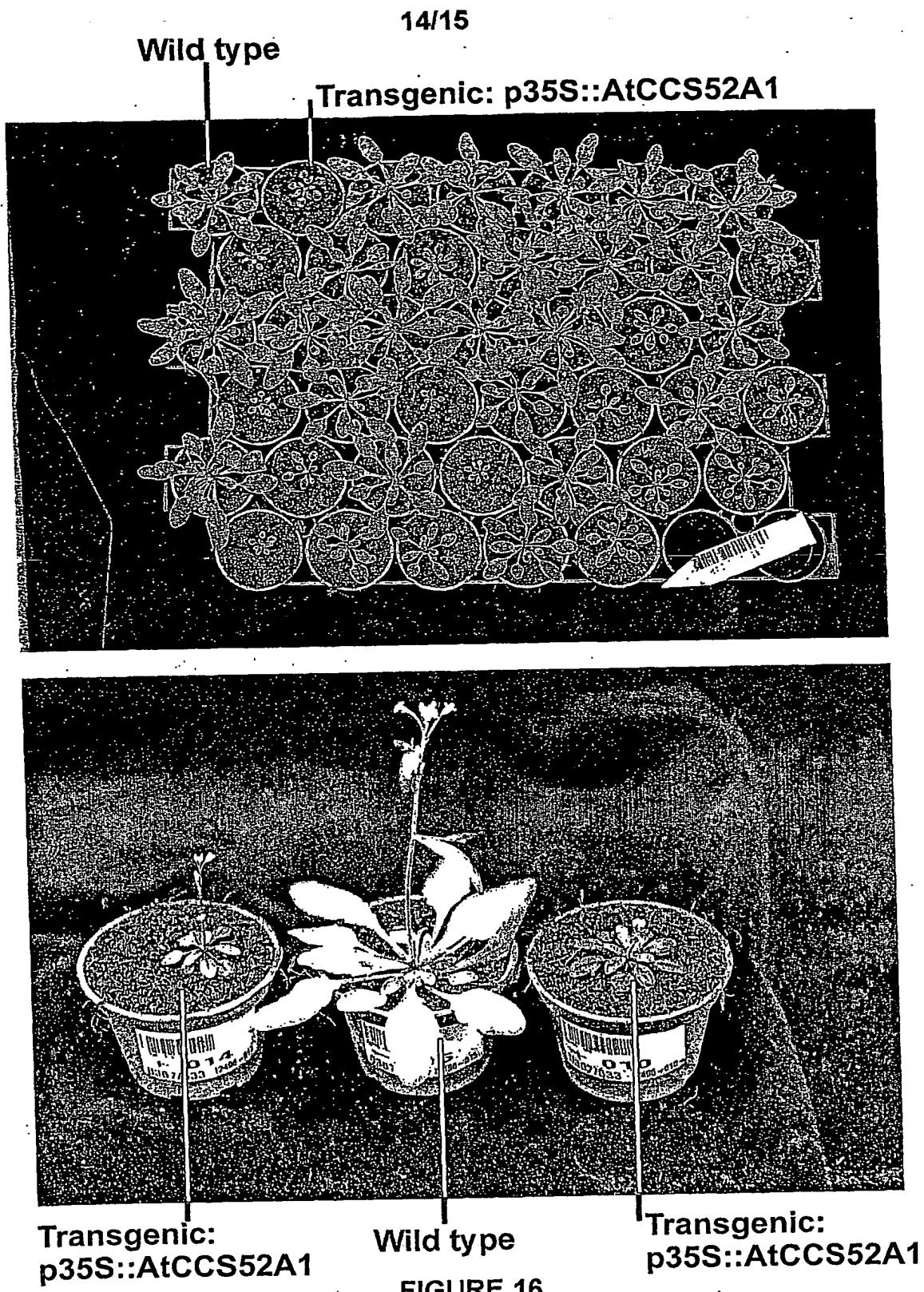


FIGURE 16

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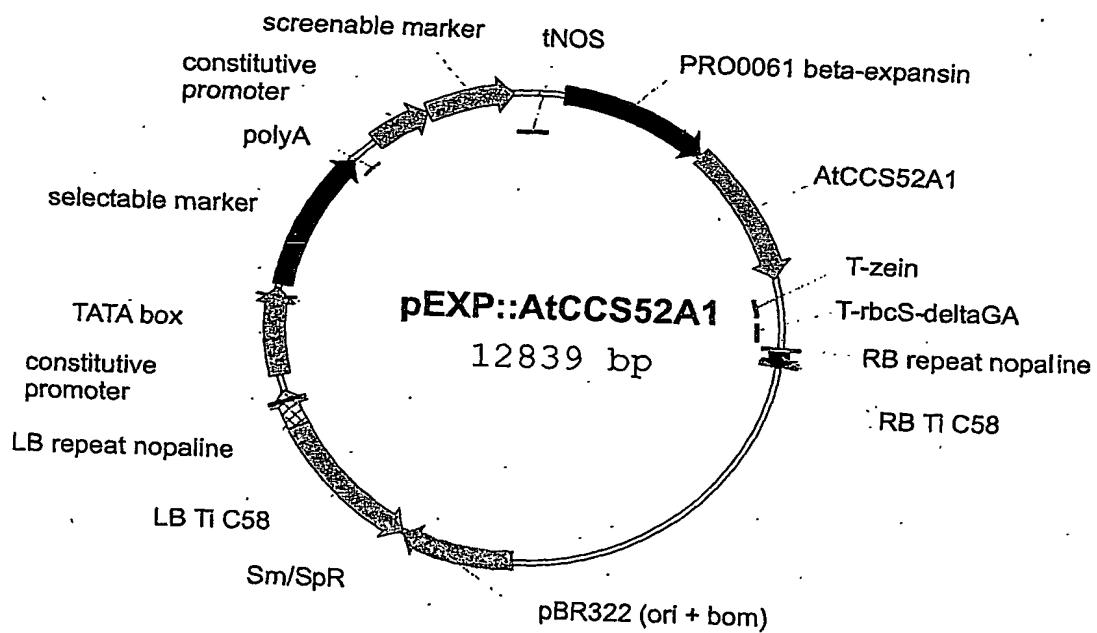


FIGURE 17